**Lesson Plan**
“A Monumental Achievement”

**Concept**
Using Minecraft to Develop Teamwork, Problem Solving, Design, & Technical Writing Skills

**Grade**
Middle School Grades (6-8)

**General Goals**
To identify and (re)create a monument within Mineraft, develop evaluation criteria to assess the accuracy of this monument, then compose a tutorial explaining how to build this monument.

**Objectives**

**1)** Given access to a course wiki page, student groups will compose a technical document explaining how to build a U.S. monument within Minecraft so that an outside party may follow the procedural steps and recreate that monument with 90% exactitude.

* Audience: Student groups (exact size will vary by class)
* Behavior: Compose a technical document explaining how to build a U.S. monument within Minecraft
* Condition: Given access to a course wiki page
* Degree: Following the procedural steps should allow a imitation of 90% exactitude of the monument by an outside party.

**2)** Given three separate sets of Minecraft youtube video transcriptions for similar projects, student groups will identify the components of procedural writing necessary to access the required course content with 100% accuracy.

* Audience: Student groups (exact size will vary by class)
* Behavior: Identify the correct events necessary to evaluate procedural writing.
* Condition: Given three separate sets of directions
* Degree: 100% accuracy

**3)** Given access to Minecraft, student groups will demonstrate teamwork and proportional design through the construction of a U.S. monument with 70% visual accuracy at a 3:5 scale, equating to 60% of the monument’s original size.

* Audience: Student groups (exact size will vary by class)
* Behavior: Demonstrate teamwork and proportional design through the construction of a U.S. monument.
* Condition: Given access to Minecraft
* Degree: Build a monument at 3:5 scale, equating to 60% of the original size, with at least 70% visual accuracy (as rated by peer student groups using a 1 - 10 scale; 10 being highest)

**Required Materials**
Minecraft (Edu edition is best), active internet connection, and course wiki pages available for student groups to write/edit/upload.

**Step by Step Procedures**

|  |  |  |  |
| --- | --- | --- | --- |
| **Action** | **Teacher** | **Instructional Strategy** | **Student** |
| 1. Introduction of lesson/ driving question | “A friend of yours has recently acquired Minecraft, but does not know how to build stuff. If you could only communicate with written words, how would you do it?” | Activation | Generate ways to complete task  mentioned by teacher |
| 2. Introduce concept of proper sequencing | “Now we are going to start with something simple, like a peanut butter and jelly sandwich. Who here believes they can write the best directions for making a sandwich?” | Demonstration | - Generate directions for making sandwich- Discuss- Determine qualities of effective technical direction writing |
| 3. “Apply the concepts to several case studies. | - “Here are transcriptions from three Youtube videos that explain how to create “X” in Minecraft, rate each based on the rubric created in step 2 for effective technical direction writing” | Demonstration | - Determining the effectiveness of each transcription to achieve its desired end- Students will also rank the transcriptions based on  effectiveness (w/ explanation) |
| 3. Select a US monument | “Here are some websites with monuments, use one of these or find your own. Remember you will need to re-create the monument in Minecraft.” |  | Student groups select appropriate US Monuments |
| 4. Create and document building of monument in Minecraft | “As you create the Minecraft representation of your chosen monument, document the steps in a rough draft.” | Activation | - Building monument- Generating list of steps needed to create monument |
| 5. Assess monuments through group interaction | “Working with another group, attempt to recreate their monument, assess the direction set based on a teacher provided rubric.” | Integration | - Evaluate other teams’ directions by creating in Minecraft and comparing results to original |
| 6. Document the creation of the monument using the course wiki | “With the feedback you received your group is to upload a final document as a Youtube video or written form with pictures.” | Integration | - Revise and post directions based on feedback |

\*\*The teacher throughout the majority of the lesson should be walking around and providing help if need be. Ultimately letting the process be self-guided as students work on each task. Stopping the class only at the transition points.\*\*

**Closure:**

Once the tutorials are complete, groups should post their “how to” documents online to share with other Minecraft user groups. As a follow-up in-class discussion, groups come back a month later to review ratings and comments in order to see how their product was rated and received by a larger online community. For a follow-up assignment, groups could then expand their technical document by translating it into a script format, in order to create *Youtube* video tutorials explaining how they created their monument.

**Assessment**

**Objective 1**: procedural exactitude (90%)

* Does the document describe a series of hierarchical steps?
* Do instructions minimize confusion by clearly differentiating each step?
* Are these steps organized in a logical sequence?
* Do instructions minimize confusion by concisely explaining each step?
	+ - *Optional*: Do instructions minimize confusion by clearly defining any relevant terms?
	+ **TEST**: Have outside group (or instructor) walk through instructions exactly as worded, then compare results; is product variation within a 10% range?

**Objective 2:** component identification (100%)

* Did students identify a series of hierarchical steps?
* Were students clearly able to differentiate between steps?
* Did students identify a logical sequence to those steps?
* Were students able to understand all directions and vocabulary/definitions used?
	+ - *Optional*: Have students isolate terms/definitions/steps that they did not understand, then discuss what they found confusing and how it could be better explained.
	+ **TEST**: Using the elements they have isolated, can student groups follow directions to recreate the element within Minecraft with (close to) 100% accuracy?

**Objective 3**: visual accuracy (70%) in terms of 3:5 scale or 60% of original monument size

* Did group accurately look up and record the monument’s original (physical) dimensions?
* Does group accurately measure the proportionate dimensions at a 3:5 scale?
* Does group list 3-4 specific features particular to that monument?
	+ - *Note*: Features must correspond to actual monument.
		- Example features may include: color, shape, size, ornamentation.
	+ **TEST**: Given a rating scale of 1-10, when combined, do other student group ratings average above a 70% visual accuracy?

**Appendix:**

1. Example Group Evaluation
2. Merrill’s Problem Based Learning Model
3. Help with Proportional Scale

**Appendix 1**

**Group Rating Example**

- Monument: Washington Monument

- Measurement: 555 feet 5 1⁄8 inches (169.294 m) tall; 55 ft 1 1⁄2 in (16.802 m) at base

- 3:5 Scale Measurement: x

- Specific Features (3-4):

* *Color*: White
	+ (least similar to original) 1   2   3   4   5   6   7   8   9   10 (most similar to original)
* *Shape*: Pencil
	+ (least similar to original) 1   2   3   4   5   6   7   8   9   10 (most similar to original)
* *Materials:* Marble/Stone
	+ (least similar to original) 1   2   3   4   5   6   7   8   9   10 (most similar to original)

**Appendix 2**

**Merrill’s Problem Based Learning Model**:

Task-Centered (should progress from simple to complex), where task progression focuses on four distinct phases of learning:

1. *Activation* (recall prior knowledge)

* This lesson teaches students to correctly identify the important aspects of technical documents by example, before creating their own.

2. *Demonstration* (new knowledge in understood contexts / new ideas, old situations)

* This lesson applies this information within a new yet commonly understood environment (for most students) - that of Minecraft.

3. *Application* (applying knowledge to real world tasks with guidance & feedback)

* This lesson uses instructor guidance and class/online feedback (via evaluations and online posts) to apply technical documentation to a virtual world task - that of minecraft monument design.

4. *Integration* (integrate knowledge into daily life via reflection, discussion, debate, & evaluation)

* This lesson integrates the knowledge of creating technical guides into student’s daily lives by participating in classroom and online evaluation and follow-up, as well as discussing the ways this model can guide other similar or related projects.

**Appendix C
Help with Proportional Scale**

Visit this site: <http://www.cis.yale.edu/ynhti/curriculum/units/1984/1/84.01.04.x.html>